

Application Serial No.: 09/883,021
Attorney Docket No.: Reveo-0127

REMARKS

Claims 1-7 and 9-31 are rejected under 35 U.S.C. Section 102(b) as being anticipated by U.S. Patent No. 5,221,982 to Faris ("Faris").

Claims 1-7 and 9-31 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent 5,325,218 to Willet et al. ("Willet") in view of U.S. Patent 5,661,533 to Wu et al. ("Wu").

Claims 1-7 and 9-31 are pending.

Rejection of Claims 1-7 and 9-31 under 35 U.S.C. Section 102(b)

The applicants' claim 1 recites a reflective liquid crystal display that includes a cholesteric liquid crystal (CLC) polarizing device. The CLC polarizing device includes multiple domains. Each of the multiple domains is skewed at a random angle relative to each of the other domains. The CLC polarizing device further includes a liquid crystal cell, and an internal quarter-wave retarder. The CLC polarizing device, the liquid crystal cell, and the quarter wave retarded are superposed with one another.

The Office Action indicates that Faris teaches multiple domains at col. 7, lines 22-34 and that each of the multiple domains is skewed at a random angle relative to each other domain at col. 8, lines 30-38. Applicants respectfully disagree with the characterization and interpretation of Faris because this reference does not, in fact, describe what is alleged in the Office Action.

Specifically, Faris teaches a polarizing wavelength separating optical element in the form of a flat panel that causes each of a plurality of polychromatic optical beams from a source, entering at one surface and transmitted to the other surface, to be converted with high conversion efficiency into beams circularly polarized, spectrally separated, and spatially separated. The portion of the specification referred to in the Office Action that allegedly teaches multiple domains (col. 7, lines

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22-34) does not, in fact, teach multiple domains, but instead teaches light strips being separated into red, green, and blue color bands by a polarizing wavelength separator. Further, the portion of the specification referred to in the Office Action that allegedly teaches that each of the multiple domains is skewed at a random angle relative to each other domain (col. 8, lines 30-38) teaches something entirely different. Instead, the cited section of Faris teaches fully converting an unpolarized beam into a right circularly polarized beam.

In contrast, applicants' invention makes a distinction between pixel regions which reflect polarized light in one of three primary colors (see page 5, lines 1-5 of the specification) and multiple domains tilted at random orientations with respect to one another (see page 5, lines 29-33 to page 6, line 1-11). The multiple domains reflect incident light at different angles resulting in diffuse reflection from the CLC polarizing device. The multiple domains of the present invention are not tuned to specific colors.

In view of the foregoing, it is respectfully submitted that Faris does not teach or suggest the subject matter recited in claim 1. Specifically, Faris fails to teach or suggest at least a reflective liquid crystal display that includes a cholesteric liquid crystal (CLC) polarizing device where the CLC polarizing device includes multiple domains and each of the multiple domains is skewed at a random angle relative to each of the other domains.

Independent claims 15, 24, and 31 recite similar features as claim 1, and therefore are patentably distinct over Faris for at least the reasons discussed in connection with claim 1. Claims 2-7, 9-14, 16-23, and 25-30, which depend directly or indirectly from the independent claims 1, 15, 24, and 31, incorporate all of the limitations of the corresponding independent claim and are therefore patentably distinct over Faris for at least those reasons provided for claim 1.

Rejection of Claims 1-7 and 9-31 under 35 U.S.C. Section 103(a)

The Office Action states that Willet teaches a reflective liquid crystal display comprising: a cholesteric liquid crystal polarizing device including at least one multiple domain structure, a liquid crystal cell, and an internal quarter-wave retarder, the cholesteric liquid crystal polarizing device, the liquid crystal cell, and the quarter-wave retarder being super posed with one another. The cholesteric liquid crystal polarizing device includes a plurality of pixel region are arranged in a repeating array of red pixels, green pixels and blue pixels reflecting circularly polarized red light, the green pixels reflecting circularly polarized green light, the blue pixels reflecting circularly polarized blue light. The Office Action also states that Willet does not teach reflective liquid crystal display includes each domains skewed at a random angle relative to each other domain, normally white, black mode device, liquid crystal cell is disposed adjacent to a tin film transistor array having a plurality of pixel regions, forming an alignment layer.

Willet teaches a liquid crystal display panel that employs a cholesteric polarizer which passes light of a first circular polarization, but reflects light of a second circular polarization. The portion of the specification referred to in the Office Action that allegedly teaches multiple domains (col. 4, lines 3-6) does not, in fact, teach multiple domains, but instead teaches using three separate cholesteric polarizers which are tuned, respectively, to the three primary colors red, green, and blue.

In contrast, applicants' invention makes a distinction between pixel regions which reflect polarized light in one of three primary colors (see page 5, lines 1-5 of the specification) and multiple domains tilted at random orientations with respect to one another (see page 5, lines 29-33 to page 6, line 1-11). The multiple domains reflect incident light at different angles resulting in diffuse reflection from the CLC polarizing device. The multiple domains of the present invention are not tuned to specific colors.

Willet does not teach or suggest the invention recited in claim 1. Specifically, Willet fails to teach or suggest, at least, a reflective liquid crystal display that includes a cholesteric liquid crystal (CLC) polarizing device where the CLC polarizing device includes multiple domains and each of the multiple domains is skewed at a random angle relative to each of the other domains.

The Office Action further states that Wu teaches each domains skewed at a random angle relative to each other domain in claim 5.

Wu teaches a surfactant-containing multistable cholesteric liquid crystal displays that exhibit ultra fast response times with both video speed and gray scale capability. Wu does not teach or suggest the invention recited in claim 1. Specifically, Wu fails to teach or suggest, at least, a reflective liquid crystal display that includes a cholesteric liquid crystal (CLC) polarizing device where the CLC polarizing device includes multiple domains and each of the multiple domains is skewed at a random angle relative to each of the other domains.

The Examiner is reminded that to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references) must teach or suggest all of the claim limitations. In re Vaeck, 947 F.2d 488 (Fed. Cir. 1991).

Since Willet does not teach or suggest the subject matter recited in claim 1 (as indicated above), and because Wu does not teach or suggest the element(s) of claim 1 that Willet is missing, applicants submit that the disclosure, in Wu, of domains skewed at a random angle relative to each other domain is of no consequence. Further, there is no suggestion or motivation in either Willet or Wu to combine the references.

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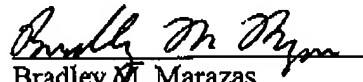
In view of the foregoing, it is respectfully submitted that Willet and Wu, whether taken alone or in combination, do not teach or suggest the subject matter recited in claim 1, as each of these references fails at least to teach or suggest, a reflective liquid crystal display that includes a cholesteric liquid crystal (CLC) polarizing device where the CLC polarizing device includes multiple domains and each of the multiple domains is skewed at a random angle relative to each of the other domains.

Independent claims 15, 24, and 31 recite similar features as claim 1, and therefore are patentably distinct over Willet in view of Wu for at least the reasons discussed in connection with claim 1. Claims 2-7, 9-14, 16-23, and 25-30, which depend directly or indirectly from the independent claims 1, 15, 24, and 31, incorporate all of the limitations of the corresponding independent claim and are therefore patentably distinct over Willet in view of Wu for at least those reasons provided for claim 1.

Conclusion

In view of the foregoing, applicants respectfully request reconsideration, withdrawal of all rejections, and allowance of all pending claims in due course.

Respectfully submitted,


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